

A method of expanding a population of cells, while at the same time inhibiting differentiation of the cells, the method includes the step of providing the cells with conditions for cell proliferation and, at the same time, for reducing a capacity of the cells in utilizing copper. The method can be executed both *in-vivo* and *ex-vivo*. A method of inducing differentiation in a population of cells, the method includes the step of providing the cells with a transition metal chelator which binds copper and which is effective in inducing cell differentiation.